Retributive Responses

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Abstract

Retributive responses do play a role in human behavior. Whether they are primarily triggered by supposed intentions or by observed consequences of actions is an important question. It can be addressed by experimental studies of retributive responses in situations in which the individual actor may inflict harmful consequences without intending and intend harmful consequences without inflicting them. Our experimental results indicate that retributive responses are more strongly influenced by observed consequences than by ascribed intentions. However, individual retributive motivations seem to be overshadowed by concerns that are non-retributive altogether in that they focus on end state distributions independently of who brought them about.

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1. Introduction

Retributive responses are acts of reward or punishment triggered by bygone events. As opposed to strategic sanctions retributive responses are incompatible with the future-directedness of the economic model of rational behavior. This may be one of the reasons why retributive responses did not receive as much attention from economists as reciprocal responses which may be seen as emerging in "the shadow of the future" (Axelrod 1984). We think that this situation needs to be rectified (see on retribution from a philosophical point of view Mackie 1985, essay, XV and within a psychological perspective Shaver 1985). Humans do behave differently towards those who have done them good than towards those who have treated them badly in the past. Rather than disputing that truly backward looking retributive responses exist their workings should be better understood.

The retributive responses that influence conflict and co-operation in our social lives basically fall into two classes. On the one hand, people respond to the good or bad consequences of acts of others quite independently of the intentions of the actors. We shall refer to such responses as consequentialist. On the other hand, the assumed intentions of actors influence retributive responses to their deeds. We shall refer to such retributive responses as intentionalist. For example in law the distinction between manslaughter – in case of unintended killing – and first degree murder – in case of intended killing – is intentionalist. The absence or presence of an intention to kill differentiates the two cases of inflicting death. At the same time the distinction between attempted murder and first degree murder is consequentialist. Whether the accused is tried merely for attempted murder or for first degree murder hinges on whether or not his victim dies, i.e. on consequences.[1]

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[1] An anonymous referee suggested the preceding examples from the Anglo-Saxon legal tradition for illustrating the, in our terminology, intentionalist and consequentialist perspectives, respectively. Inflicting punishments does not only serve retributive purposes but also the prospective one to deter potential criminals from doing harm in the future. But in any event the distinction between intentionalist and consequentialist perspectives is of great importance. Our interest in the topic was originally triggered by a striking German case in which two subjects got into the apartment of an elderly couple whom they forced to open the safe. The burglars took every pre-caution to protect the couple's health. They gave their victims -- as could be proved later on -- the medication for their weak hearts and induced the

In our ordinary lives both consequentialist and intentionalist kinds of motivation are present. It is often unclear, however, which is the driving force and when. In view of this it seems that a better understanding of how in fact consequentialist and intentionalist views influence our behavior is highly desirable. We therefore conducted two variants of an experiment designed to elicit retributive responses. In the experiment acts which are associated with harmful consequences under specific conditions are not under other conditions. Observing how responses to acts vary with consequences provides some insights into the relative importance of intentionalist and consequentialist retributive inclinations. But it also shows that retributive responses either to intentions or consequences can be over-shadowed by non-retributive normative considerations.

2. The experiment

We study two variants of one experimental game that only differ in the descriptions of the choice alternatives presented to the subjects. In the first variant of the experiment, the "objective treatment" henceforth, the alternatives are described in neutral terms (see the appendix). Beyond informing them about the payoff structure itself, the participants are not specifically induced to perceive the situation within a retributive frame of reference. In the second variant, the "resentment treatment" henceforth, retribution is invited by the framing of the experiment. The experiment is described in value laden terms like "enforcer", "defector" etc. suggesting a "moralistic" point of view (see on “moral resentment” Strawson 1962).

2.1. The decision situation

In the experiment small groups of four individuals are exposed to a situation of mutual externality. In each group of four, three of the individuals are playing in a player A role and one in a player B role. Each A player has to decide between a cooperative alternative C and a

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police to look after the couple (incidentally voice recording afterwards provided the crucial clue revealing the criminals’ identity). Tragically the two victims died, nevertheless. A lower German court decided that there was no intention to kill and reached a rather mild verdict while a higher court later on insisted that in view of the consequences the trial be repeated and a harsher verdict be found.

non-cooperative alternative D. (In the questionnaire the alternatives were described as “A1” and “A2”, respectively, but here we use the conventional “C” as a reminder of cooperation and “D” as a reminder of defection.) Those A players who choose to defect risk a harmful effect on the payoffs of the other players in the group. At the same time, however, a chance move determines whether their defective choice is observable to the player B who fixes the payoffs of ‘caught’ defectors (but cannot influence payoffs of uncaught defectors).[2] In particular, f or all possible contingencies in which at least one choice of D occurs, that is for all numbers i=0, 1, 2, of A players who might choose C, player B assigns the payoffs P(i) for found out D-choosers. Table 1 shows the payoffs of the group-members for alternative numbers of C-choosers in the group. The payoff consequences are known to all players.

Number of Choosers of C	Payoff of B	Payoff of C-chooser	Payoff of D-chooser for 1,2,3,4	Payoff of D-chooser for 5,6 as fixed by B
0	5 DM	-	15 DM	P(0) DM
1	5 DM	5 DM	15 DM	P(1) DM
2	10 DM	10 DM	15 DM	P(2) DM
3	10 DM	10 DM	-	-

Table 1: Payoffs depending on the number of C-choosers

If nobody chooses C then choosers of D whose die shows 1, 2, 3, 4 receive 15 DM while those who are found out end up with P(0), $0 \leq P(0) \leq 15$ DM. Here P(0) is the amount the player in role B fixes as appropriate for a detected D-chooser if nobody chooses C. Player B receives 5 DM if no A player chooses C.

If exactly one person chooses C then this person receives 5 DM. Player B still receives 5 DM and in that sense does not benefit from the one C-chooser's restraint. All D-choosers who are

[2] In the experiment, subjects, after they have made their choices, had to throw a die in order to determine whether they are caught. A chooser of D was treated as found out if and only if the numbers 5 or 6 came up. Since we wanted to protect anonymity, *all* players (including B players and cooperative A players) threw a die, but, of course, the outcome of the chance event affected only the payoffs of defective A players.

not found out receive 15 DM while those who get caught end up with P(1), $0 \leq P(1) \leq 15$ DM. Here P(1) is the amount the player in role B fixes as appropriate for a found out D-chooser if one other individual chose D as well.

If two persons chose C then both receive 10 DM and so does player B while the single chooser of D, if undetected, gets 15 DM and P(2), $0 \leq P(2) \leq 15$ DM, if his die shows 5 or 6.

If all A choose C then all members of the group including B receive 10 DM. Obviously for that contingency B need not assign anything.

In the two cases in which at least two of the As co-operate exactly the same payoffs accrue to the C-choosers and to B. To put it slightly otherwise, a single D-chooser does no harm so that, from a consequentialist point of view, there is no reason to punish the defector. Morally, however, the situation in which there is a single D-chooser is somewhat ambiguous. For example, a straight-forward utilitarian – i.e. a person who believes that an act is morally right if and only if it maximizes the non-moral utility for all individuals -- could argue that the single D-chooser at least after the fact did "the right utility or welfare maximizing thing" by choosing D if the other As chose C. But what is right by hindsight may not be right beforehand. In the light of foresight the action of the single D-chooser may be viewed as imposing the risk of losing five units on the other members -- which would happen should there be at least one other D-chooser. On behalf of the risk imposed even a straightforward utilitarian who insists on choosing acts that are expected to bring about utility maximizing consequences might criticize the behavior for violating the requirement of choosing what is best in the light of foreseeable or expected consequences.Of course, within an intentionalist moral perspective, defection must be clearly criticized as well.

If exactly two choose D then none bears the sole responsibility for the causal effects brought about by their actions. Still in the case of the two choosers of D each of them could have causally effected the other alternative by choosing otherwise. Each of the D-choosers could have chosen C and thereby produced a positive external effect. A consequentialist could therefore clearly criticize individuals for choosing D.

If, however, none of the individuals in role A chooses C then a single change of action is causally ineffectual in the sense of there being no external effects on the payoffs of the remaining players, including B. Therefore, arguably, there is no basis for consequentialist retribution (choosing C can and by the straightforward utilitarian should be deemed wrong).

However, within intentionalist moral perspectives choosing C may be viewed as obligatory regardless of the causal insignificance of individual behavioral changes.

2.2 Conducting the experiment

In total, 243 students of economics participated in two classroom experiments, each examining one framing variant of the underlying decision situation. Participants were randomly assigned to A or B player roles. No subject participated twice. All choices were made secretly and anonymously (each subject's choices were identified with the help of a code number) and all subjects were paid according to their decisions and the rules of the game. (The decision sheets reproduced in the appendix show in detail how the two differently framed variants of the experiment were conducted.) In the objective treatment B-players were merely asked to fix the payoffs P(.) and A-player actions were described as A1 (C in the description) and A2 (D in the description). In the resentment treatment B-players were asked to adopt the role of an "enforcer" who would "punish" "defectors" for alternative numbers of "staying on co-operators". B-players knew that their assignments would not be announced and in that sense could not have any preventive effect on the behavior of A-players.

Since there were more individuals in role B than there were groups, some of the role B individuals were randomly assigned to one of the groups. Afterwards it was decided by lot whose payoff assignment would be used in determining the payoff.[3] Remaining A players were treated analogously. In the objective treatment, 8 role A individuals and 3 role B individuals did not correctly answer the control questions which were included on the decision sheet to check whether the rules were understood. In the resentment treatment 4 subjects did not answer the control questions correctly.[4] Statistical scrutiny revealed no

[3] This implies that one and the same group of three A role participants may be relevant for more than one B role player. In that case, from the B players assigned to the group of A players, one B role player is chosen by lot. The payoff assignment made by this chosen player becomes payoff relevant for the group of A players. Like this player all other B players assigned to that group of A players receive the payoffs determined by the choices of the A-members of the group.

[4] Though this effect is statistically insignificant, p it possibly reflects that the resentment treatment triggered more appropriate intuitions than the objective treatment. For the number

correlation between the subjects' proclivity to answer the control questions correctly or incorrectly and their player roles in the experiment, the treatments, or their choices. The 15 individuals who did not understand the game properly could therefore be excluded from the final analysis without loss.

Our subsequent discussion of the objective treatment is based on responses of 112 individuals of whom 75 served as role A players and 37 as role B players. The discussion of the resentment treatment involves 116 individuals of whom 77 were assigned to the player A and 39 to the player B role.

A players were asked to make their payoff relevant decision of either C or D and a hypothetical – payoff irrelevant -- decision by counterfactually adopting the B player role. Likewise B players were asked to make two types of decisions. First, they were asked to fix the payoff for a found out D player contingent on the number of other D players. Second, B players were asked to adopt hypothetically the A player role and to indicate how they would have chosen then.

3. Results and interpretation

3.1 Average behavior

Table 2 shows the numbers of observations and the average choices in both treatments for both types of players separately, while Figure 1 illustrates the average payoff assignments to a D-chooser. Several features of the average data should be noted. First, average payoff assignments are strictly increasing in the number of C-choosers (two-sided Wilcoxon signed ranks tests yield significance on the 5 percent level for the comparison between P(0) and P(1) and for the comparison of P(1) and P(2), separately; the same statistical conclusions hold if one analyzes the data for the objective and resentment treatments or for the A and B players separately).

Second, not surprisingly, in the resentment treatment the average payoff assignments as shown in Table 2 to a D-chooser are markedly lower (the average difference is 1.82 DM) than

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of 116 individuals participating in the resentment treatment was even larger than the number of 112 individuals participating in the objective treatment.

in the objective treatment (exact two-sided Mann-Whitney *U*-tests yield p = .000, .000, and .021 for P(0), P(1), and P(2), respectively). However, framing the decision in a moralistic and retributivist framework, suggesting personal responsibility for "staying on" as opposed to "defecting", did not significantly enhance the proclivity to make C-choices in the A player role. There are only about two percent less D-choosers in the moralistic frame (p = .73, exact two-sided Fisher test). A-players who understand the game and payoff structure seem to perceive the interaction similarly in both treatments. In any event, the surprising robustness of A-behavior when varying the frame (see more generally on frame or presentation effects, Pruitt 1967, and Kahneman and Tversky 1984) suggests that the motivational factors driving A-behavior in the experiment are non-arbitrary even though responses are sensitive to framing.

	Objective		Resentment		Sum	
	A Hypothetical decision for B player role	B Payoff relevant decision of B	A Hypothetical decision for B player role	B Payoff relevant decision of B	A Hypothetical decision for B player role	B Payoff relevant decision of B
Number	112		116		228	
	75	37	77	39	152	76
P(0)	6.42		4.40		5.40	
[average]	7.18	4.89	4.72	3.79	5.93	4.33
P(1)	6.96		4.86		5.89	
[average]	7.68	5.49	5.32	3.96	6.48	4.70
P(2)	9.25		7.91		8.57	
[average]	9.97	7.81	8.44	6.86	9.19	7.32
D-chooser	83.93		81.90		82.89	
[percent]	88.00	75.68	85.71	74.36	86.84	75.00

Table 2: Average data

Table 2: Average payoff scores as a function of experimental treatment and player role

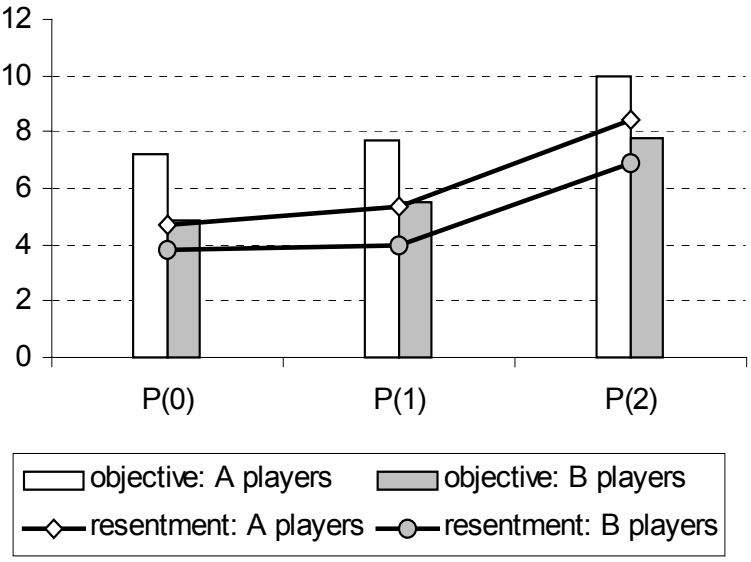

Figure 1: Average payoff assignments for D-chooser arranged according to treatment and payoff relevant (B player) and hypothetical (A player) choices

Third, there is a general self-serving tendency when specifying choices (see on self-serving biases in a somewhat different vein Babcock and Loewenstein 1997). Those who – either in their payoff relevant or in their hypothetical choices as A role players – made D-choices would on average assign significantly higher payoffs to found out D-choosers (exact two-sided Mann-Whitney *U*-tests yield p = .018, .000, and .005 for P(0), P(1), and P(2), respectively). Moreover, A players when hypothetically adopting the B player role, assigned higher payoffs to detected D-choosers than B players (all corresponding two-sided Mann-Whitney *U*-tests yield significance on the 5 percent-level).[5] Finally, hypothetical C-choices are coming forward more easily than payoff relevant C-choices (p = .020, exact one-sided Fisher test; the corresponding value is .05 for the objective treatment data and .10 for the resentment treatment data). Apparently solidarity is more likely to be expressed if this can be accomplished at no cost.

[5] Since we did not find any statistically (or economically) significant effects of the treatment on the self-serving biases reported here, we suppress the corresponding results.

3.2. Patterns in individual payoff assignments

Alternative patterns[6] of payoff assignments may be interpreted as qualitatively distinct responses. In the experimental data one can distinguish the following typical patterns of payoff assignments:

PI- $P(0)=P(1)=P(2)$,

PII- $P(0) \leq P(1)<P(2)$,

PIIa- $P(0)=P(1)<P(2)$,

PIIb- $P(0)<P(1)<P(2)$,

PIII- $P(0)>P(1)>P(2)$

Almost all, namely 221 out of the 228 responses included in the analysis, conform to one of the patterns. In view of the monotony of the prevailing patterns it seems safe to conclude that the assignments -- including the hypothetical ones -- were made in a deliberate way. The *patterns* of hypothetical assignments (by A players) and the non-hypothetical assignments (by B players) for found out D-choosers showed no significant differences. Neither was there a significant difference in the pattern distribution between the objective and the resentment treatment. (Though type PIIa is somewhat more and type PIII somewhat less frequently chosen under the resentment treatment, none of the corresponding χ^2 is significant on the 10% level.) The distribution of patterns of payoff assignments is represented in Table 3.

[6] Each participant chooses a vector of payoffs (P(0), P(1), P(2)). We can therefore explore retributive responses in an intra-personal manner.

	PI P(0)=P(1)=P(2)	PII P(0)=P(1)<P(2)	PII P(0)<P(1)<P(2)	PIII P(0)>P(1)>P(2)	other
Objective treatment					
A (#75)	22	22	18	9	4
B(#37)	10	11	11	4	1
Sum 1	32	33	29	13	5
Resentment treatment					
A (#77)	20	33	18	5	1
B(#39)	13	15	8	2	1
Sum 2	33	48	26	7	2
Both treatments					
Sum 1+2	65	81	55	20	7

Table 3: Distribution of Patterns of Payoff Assignments

PI

In this pattern whether the payoff of others is affected by individual choices of D or not does not matter.. Of the 65 subjects who were assigning payoffs according to PI only 14 chose (P(0), P(1), P(2)) = (0, 0, 0). In this case the lowest possible payoff is assigned to any found out D-chooser, no matter what. This may indeed indicate intentionalist retributive responses in the narrow sense of being guided by the desire to punish actors for their imputed bad motives. Still, even though the design of our experiment carefully avoided any invitation to endorse preventive views of punishment it cannot be completely excluded that some participants nevertheless perceived the situation that way when assigning (P(0), P(1), P(2)) = (0, 0, 0).

Another 16 of the 65 whose assignments exhibited pattern PI chose (P(0), P(1), P(2)) = (15, 15, 15). The primary concern of this basically non-retributive response may not be equality but rather efficiency. For, if under this assignment all A players choose D, the payoff sum is guaranteed to be maximal for the group. But it may also be that the players who assigned (P(0), P(1), P(2)) = (15, 15, 15) interpreted the choice in the A player role as a gambling task

and refrained from retribution because they did not want to see the merely unfortunate ones punished.

In the objective treatment 10 of the 22 A players with pattern PI decided on P(0)=P(1)=P(2)=15 while only one of the 10 B players who favored the PI pattern chose a payoff of 15 for all contingencies. Thus payoff maximization for the whole group is not the driving motive. It seems plausible that the A players with P(0)=P(1)=P(2)=15, when adopting hypothetically the player B role, nevertheless perceived themselves primarily as "A cum D"-players (of the 10 A players who hypothetically assigned a PI-pattern of value 15 in the objective treatment merely one chose C). In any case a self-serving consideration seems more relevant than assigning payoffs in response to imputed intentions. The 5 observations of the PI pattern (P(0), P(1), P(2)) = (15, 15, 15) in the resentment treatment are also hypothetical and thus of the self-serving kind.

There were 7 choices of (P(0), P(1), P(2)) = (5, 5, 5) and 9 choices of (P(0), P(1), P(2)) = (10, 10, 10). It is possible that these uniform assignments were chosen merely for reasons of prominence. However, the pattern PI assigning 5 DM no matter what may also be viewed as appropriate "punishment". It will bring down the found out D-chooser to the minimum guaranteed payoff of participants. The pattern that assigns 10 units to the found out D-player most plausibly seems to indicate a desire to reach the "fair egalitarian" distribution which emerges if all choose C in the A player role.

PII

There are two variants of PII, namely PIIa and PIIb.

PIIa

Here non-retributive, outcome oriented considerations of fairness seem to play a prominent role. This is borne out by the fact that 42 (that is 18% of all 228 and 52% of the relevant subcategory of 81) participants assigned P(0)=P(1)=5 and P(2)=10. By this most frequently chosen assignment it is guaranteed that deviators, should they be detected, receive exactly the same payoff as the co-operators and B. More generally speaking the pattern PIIa may in fact be neither intentionalist nor consequentialist but simply non-retributive. Distributional

concern with end states seems so strong that it overshadows considerations of personal responsibility for bringing about those states.

PIIb

P(0)<P(1) cannot be explained by a difference in the external consequences exerted on others since there are no such differences. Again retributive responses -- either to intentions or consequences of acts -- cannot explain payoff assignments. Outcome oriented non-retributive concerns must be involved -- like in considering a breach of norms as more serious and requiring stronger responses if the number of breaches increases.

PIII

As opposed to the preceding cases in which payoff functions are increasing in the number of individuals who co-operate, the payoff pattern PIII is strictly decreasing in the number of co-operators P(0)>P(1)>P(2). Between all and merely two co-operators the deviation does not cause any damage. Yet a detected deviator gets less than an undetected one, since DM 15 >P(2). Likewise, even though the change from none to one in the number of co-operators is inconsequential for the payoff of others, we still have P(1)<P(0).

For the emergence of the retributive pattern PIII non-consequentialist factors are at least co-responsible. If nobody co-operates anyway, then deviation does no harm and it may seem unjustified within a consequentialist perspective to punish it as severely as in cases of more frequent co-operation. On the other hand, if all others co-operate then a single deviation does no harm either but it cannot be excused by pointing to other deviations. In short, whereas pattern PIIb might be explained by the view that a higher frequency of norm breaches requires tougher responses the pattern PIII may be the outcome of an opposite tendency of excusing breaches by other breaches of norms.

3. Discussion

The quantitative level of retributive responses somewhat varies with the framing of the decision task. But the distribution of qualitative patterns is surprisingly robust across treatments. The patterns discussed in the preceding section reveal quite some heterogeneity in responses. For instance, at least those individuals who chose to assign (P(0), P(1), P(2)) = (0, 0, 0) in their practical retributive responses focus on individual behavior per se rather than on its consequences. In all likelihood the retributive responses of such individuals are triggered by the intentions that they see expressed in other individuals' behavior. But in our data only 6% of the choices can be conclusively interpreted this way.

On the other hand, those individuals (7%) who chose (P(0), P(1), P(2)) = (15, 15, 15) seem to focus on fairness between detected and undetected defectors and those (18%) who chose (P(0), P(1), P(2)) = (5, 5, 10) seem to focus on fairness between detected defectors, co-operators and the B player. It is at least open if not unlikely whether their responses are retributive at all. More generally, with the possible, in fact rather plausible, exception of the uniform assignment of zero payoffs always non-retributive considerations seem at least co-responsible for the assignments. From this it may be concluded that retribution which plays a prominent role in more theoretical moral or legal discussions, in particular of punishment, is rarely a dominant motive in practice. And this holds good quite independently of whether consequences or intentions are regarded as the proper focus of retribution.

A related issue recently came up in the research on the ‘nature of reciprocity’. While Rabin (1993), among others, holds the view that reciprocal behavior is triggered by the belief that another’s action was good or ill intended, more recent theories by Bolton and Ockenfels (2000) and Fehr and Schmidt (1999) rely on attempts to implement fixed preferences over payoff allocations. While the former model might be interpreted in retributive terms, in fact in terms of what we called intentionalist retribution, the latter approaches appear to be more in line with non-retributive distributional motivations for payoff assignments.

Of course non-retributive distributional considerations often cannot be separated empirically from consequentialist retribution. Reciprocal action can only be triggered when the others’ actions actually change the actor’s set of feasible payoff distributions and therefore depend directly on the consequences of others’ actions. The (rare) experimental evidence on the impact of distributional considerations versus intentionality is mixed. While most studies in

experimental economics provide substantial support for the influence of distributional considerations on reciprocal actions, some also provide evidence for intentionality (see Blount, 1995, Charness, 1996, Kagel, Kim and Moser, 1996, and for a discussion of this issue Bolton, Brandts and Ockenfels, 1998 and 2000). In any event the remarkable inter-individual variety of response patterns in our experiment speaks clearly against some philosophical and common sense views which claim that there are some quite universal retributive responses. Our results indicate that there seems to be robust variety rather than uniformity including entirely non-retributive concerns along with intentionalist and consequentialist retributive responses.

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Appendix

Instructions for the objective and the resentment treatment

(Translation from German.)

A. Instructions for the objective treatment

DECISION SITUATION:

You are a member of a group of four. There are three "A decision makers" and one "B decision maker" in each group. You will be informed as to whether you are an A or B from the decision sheet enclosed.

The three A decision makers each decide between the alternative *A1* and the alternative *A2*. If two of the three As choose alternative *A1*, then those who have chosen *A1* as well as the B decision maker receive 10 DM. If only one or none of the As chooses alternative *A1*, then the one who has decided on *A1* and B each receive 5 DM.

The payoff of those who choose *A2* depends on chance and the decision of B. All choosers of *A2* must throw a die once. The *A2*-choosers who end up with a 1, 2, 3, or 4 receive 15 DM. If they throw a 5 or a 6, B decides what they get as *A2*-choosers. B can make his decision dependent upon the number of members in the group who have chosen *A2*. The payoff of the *A2*-choosers must lie between 0 and 15 DM.

The following table sums up the payoff rules. Each of the A decision makers chooses either *A1* or *A2*. Dependent on the number of *A1*-choosers in the group, the B decision maker fixes the payoffs of those *A2*-choosers who end up with a 5 or 6 after throwing the die.

Number of *A1*-Choosers	Payoff of B	Payoff of the *A1*-Choosers	Payoff of the *A2*-Choosers	
			Die Result: 1, 2, 3 or 4	Die Result: 5 or 6
0	5 DM	--	15 DM	DM*
1	5 DM	5 DM	15 DM	DM*
2	10 DM	10 DM	15 DM	DM*
3	10 DM	10 DM	--	--

* The payoff is to be decided by B. It must be between 0 and 15 DM.

CONDUCTING THE EXPERIMENT:

The decision sheet informs you whether, in your group, you adopt the role of being one of the A decision makers or that of the B decision maker. We kindly ask you to answer the control question first and then to fill out the decision sheet for the other role -- purely hypothetically. After you have made your own payoff-relevant decision, please put your decision sheet into the envelope that you have received.

Now every participant must throw a die. The result of throwing the die will be marked on the envelop. The result of throwing the die is, obviously, relevant only for those who chose *A2*. But since we intend to protect the anonymity of the participants and do not know whether you are an *A2*-chooser or not, all participants must throw a die. After that we will collect the envelopes with the decision sheets.

The different groups, each composed of three A decison makers and one B decision maker, can be identified by your code-number. Your payoffs are calculated according to the rules and will be paid out in cash later. In order to receive the payoff, you need the card from your envelope which like the decision sheet is marked with your code-number. Using the card, we can identify you. It serves, in particular, as a voucher for receiving the payoff next week in the office of our secretary (W-Building, Room C-213, 9:00-12:00 a.m.). So, be careful not to lose the card! Since identification takes place through the code-number, the anonymity of your decision is protected.

If you have any questions concerning procedures or concerning the interpretation of the decision situation, please raise your hand and we will come to you. All other side conversations are strictly forbidden.

Decision Sheet for A

Control Question: Assume that one A in your group chooses alternative *A1*and two As choose alternative *A2*. Assume further that B has fixed a payoff of 7 DM for those A decision makers who ended up with a 5 or 6 after throwing the die. What is the payoff of the different group members if one of the *A2*-choosers throws a 3 and the other one a 5?

--Payoff of the *A1*-chooser: DM

--Payoff of the *A2*-chooser who has thrown a 3: DM

--Payoff of the *A2*-chooser who has thrown a 5: DM

--Payoff of B: DM

.....

Your Hypothetical Decision in the Role of *B*

You have been assigned the role of an A decision maker! Please decide, purely hypothetically, as if you were assigned the role of B. Note in the grey cells of the following table how you would decide based on the number of the *A1*-choosers in your group.

Number of *A1*-Choosers	Payoff of B	Payoff of the *A1*-Choosers	Payoff of the *A2*-Choosers	
			Die Result: 1, 2, 3 or 4	Die Result: 5 or 6
0	5 DM	--	15 DM	DM*
1	5 DM	5 DM	15 DM	DM*
2	10 DM	10 DM	15 DM	DM*
3	10 DM	10 DM	--	--

* The payoff must be between 0 and 15 DM.

Your Decision as A

Please check your decision here. Be aware that this decision affects the payoffs.

I choose the alternative: **O** *A1* **O** *A2*

Decision Sheet for *B*

Control Question: Assume that one A in your group chooses alternative *A1*and two As choose alternative *A2*. Assume further that B has fixed a payoff of 7 DM for those A decision makers who ended up with a 5 or 6 after throwing the die. What is the payoff of the different group members if one of the *A2*-choosers throws a 3 and the other one a 5?

--Payoff of the *A1*-chooser: DM

--Payoff of the *A2*-chooser who has thrown a 3: DM

--Payoff of the *A2*-chooser who has thrown a 5: DM

--Payoff of B: DM

.....

Your Hypothetical Decision as *A*

You have been assigned the role of B! Please decide, purely hypothetically, on the assumption that you would have been assigned the role of an A decision maker.

I choose the alternative: **O** *A1* **O** *A2*

.....

Your Decision in the Role of *B*

Please decide on the payoff of the *A2*-choosers who happen to throw a 5 or 6. Note in the grey cells of the following table the payoffs based on the number of the *A1*-Choosers in your group. Remember that these decisions are payoff-relevant.

Number of *A1*-Choosers	Payoff of B	Payoff of the *A1*-Choosers	Payoff of the *A2*-Choosers	
			Die Result: 1, 2, 3 or 4	Die Result: 5 or 6
0	5 DM	--	15 DM	DM*
1	5 DM	5 DM	15 DM	DM*
2	10 DM	10 DM	15 DM	DM*
3	10 DM	10 DM	--	--

*The payoff must be between 0 and 15 DM.

B. **Instructions for the resentment treatment**

DECISION SITUATION:

You are a member of a group of four. There are three "decision makers" and one "enforcer" in each group. You will be informed as to whether you are a decision maker or an enforcer from the decision sheet enclosed.

The three decision makers each decide between the alternative to stay with the group and the alternative to defect. If two of the three As choose to stay, then those who stay as well as the enforcer receive 10 DM. If only one or none of the decision makers chooses to stay, then the one who has decided to stay and the enforcer each receive 5 DM.

The payoff of those decision makers who defect depends on chance and the decision of the enforcer: All defectors must throw a die once. The defectors who end up with a 1, 2, 3, or 4 receive 15 DM. If they throw a 5 or a 6, the enforcer decides what they get as defectors. B can make his decision dependent upon the number of members in the group who have chosen to stay. The payoff of the defectors must lie between 0 and 15 DM.

The following table sums up the payoff rules. Each of the decision makers chooses either to stay or to defect. Dependent on the number of those who stay in the group, the B enforcer fixes the payoff of those defectors who end up with a 5 or 6 when throwing the die.

Number of those who stay	Payoff of the enforcer	Payoff of the those who stay	Payoff of defectors	
			Die Result: 1, 2, 3 or 4	Die Result: 5 or 6
0	5 DM	--	15 DM	DM*
1	5 DM	5 DM	15 DM	DM*
2	10 DM	10 DM	15 DM	DM*
3	10 DM	10 DM	--	--

*The empty fields in the last column will be filled in by the enforcer. Those payoffs must be between 0 and 15 DM.

CONDUCTING THE EXPERIMENT:

The decision sheet informs you whether, in your group, you adopt the role of being one of the decision makers or that of the enforcer. We kindly ask you to answer the control question first and then to fill out the decision sheet for the other role -- purely hypothetically. After you have made your own payoff-relevant decision, please put your decision sheet into the envelope that you have received.

Now every participant must throw a die. The result of throwing the die will be marked on the envelop. The result of throwing the die is, obviously, relevant only for those who chose to defect. But since we do not know whether you are a decision maker or an enforcer and in the latter case whether you are a defector, all participants must throw a die. After that we will collect the envelopes with the decision sheets.

Now we will randomly form groups with three decision makers and one enforcer each. Your payoffs are calculated according to the rules and will be paid out in cash later.

In order to receive the payoff, you need the card from your envelope which like the decision sheet is marked with your code-number. Using the card, we can identify you. It serves, in particular, as a voucher for receiving the payoff next week in the office of our secretary (Room 412, Frau Janette Böhnisch). So, be careful not to lose the card and present it for the pay out! Since identification takes place only through the code-number, the anonymity of your decision is protected.

If you have any questions concerning procedures or concerning the interpretation of the decision situation, please raise your hand and we will come to you. All other side conversations are strictly forbidden.

Decision Sheet For a Decision Maker

Control Question: Assume that one decision maker in your group chooses to stay and two decision makers choose to defect. Assume further that the enforcer has fixed in this case a payoff of 7 DM for those decision makers who ended up with a 5 or 6 after throwing the die. What is the payoff of the different group members if one of the defectors throws a 3 and the other one a 5?

--Payoff of the staying on decision maker: DM

--Payoff of the defector who has thrown a 3: DM

--Payoff of the defector who has thrown a 5: DM

--Payoff of the enforcer: DM

.....

Your Hypothetical Decision in the Enforcer Role

Please decide, purely hypothetically, as if you were assigned the role of an enforcer. Note in the gray cells of the following table how you would decide based on the number of those who stay in your group.

Number of those who stay	Payoff of the enforcer	Payoff of the those who stay	Payoff of defectors	
			Die Result: 1, 2, 3 or 4	Die Result: 5 or 6
0	5 DM	--	15 DM	DM*
1	5 DM	5 DM	15 DM	DM*
2	10 DM	10 DM	15 DM	DM*
3	10 DM	10 DM	--	--

*The empty fields in the last column will be filled in by the enforcer. Those payoffs must be between 0 and 15 DM.

Your Decision as Decision Maker

Please check your decision here. Be aware that this decision affects the payoffs.

O I stay with the group **O** I defect

You are an Enforcer

Control Question: Assume that one decision maker in your group chooses to stay and two decision makers choose to defect. Assume further that the enforcer has fixed in this case a payoff of 7 DM for those decision makers who ended up with a 5 or 6 after throwing the die. What is the payoff of the different group members if one of the defectors throws a 3 and the other one a 5?

--Payoff of the staying on decision maker: DM

--Payoff of the defector who has thrown a 3: DM

--Payoff of the defector who has thrown a 5: DM

--Payoff of the enforcer: DM

.....

Your Hypothetical Decision as a Decision Maker

Please decide, purely hypothetically, on the assumption that you would have been assigned the role of a decision maker.

O I stay with the group **O** I defect

.....

Your Decision in the Enforcer Role

Please decide about the payoffs of defectors who throw a 5 or six. Note in the gray cells of the following table how you decide based on the number of those who defect from your group. Be aware that this decision affects the payoffs.

Number of those who stay	Payoff of the enforcer	Payoff of the those who stay	Payoff of defectors	
			Die Result: 1, 2, 3 or 4	Die Result: 5 or 6
0	5 DM	--	15 DM	DM*
1	5 DM	5 DM	15 DM	DM*
2	10 DM	10 DM	15 DM	DM*
3	10 DM	10 DM	--	--

*The empty fields in the last column will be filled in by the enforcer. Those payoffs must be between 0 and 15 DM.